

## Where are they now? A baseline distributional description of introduced redclaw crayfish *Cherax quadricarinatus* (von Martens) in the east Kimberley region

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### Abstract

A trapping survey in the wider Ord River catchment and adjacent river systems of the east Kimberley region between August and December 2006, failed to extend the distributional range of redclaw crayfish beyond Lake Kununurra, where it was first introduced in 1998. These findings suggest an opportunity remains for its control.

**Keywords:** redclaw crayfish; *Cherax quadricarinatus*; introduced species; translocation, Kimberley

### Introduction

In 2000, redclaw crayfish *Cherax quadricarinatus* (von Martens) were first found in Lake Kununurra on the Ord River, and their introduction is the first recording of any freshwater crayfish species in Western Australia's Kimberley region (Doupe *et al.* 2004). Redclaw crayfish are a tropical species with a pre-European distribution thought to be confined to far northern Queensland and the northern and eastern parts of the Northern Territory (Riek 1969). In the Northern Territory, however, they have been translocated as far south-west as the Flora-Katherine-Daly River system (G Dally, Museum and Art Gallery of the Northern Territory, *pers comm*), but are thought to be absent from the Victoria River and those other river systems extending westwards to the Western Australian border (I Ruscoe, Northern Territory Department of Fisheries, *pers comm*).

Who translocated redclaw crayfish to the east Kimberley remains unknown and apart from the significant concerns for their probable ecological impact (e.g. Sala *et al.* 2000), this introduction has raised several questions including, what is the likelihood of them spreading into the wider Ord River system and beyond? And, where is the nearest population(s) of redclaw crayfish in the Northern Territory? In this paper I summarize the results of an extensive sampling program designed to provide baseline distributional data for redclaw crayfish in the east Kimberley region of northern Australia.

### Materials and Methods

Between August and December 2006 I sampled the wider Ord River catchment and adjacent river systems for redclaw crayfish (Fig 1). My sampling program

focused on those waterways and fishing areas that are most readily accessible, and particularly by recreational anglers, because Australian Quarantine Inspection Service personnel occasionally confiscate redclaw crayfish from fishermen attempting to bring these animals from the adjacent Northern Territory for use as bait (Doupe *et al.* 2004). At each site (see Table 1 for details) I set 20 – 50 box-style (or opera house) crayfish traps baited with poultry pellets in replicate sets among recognizably different microhabitats for three consecutive nights. All traps were inspected every morning and reset, regardless of trapping success.

### Results and Discussion

I have been monitoring the upstream spread of redclaw crayfish in Lake Kununurra since 2002 and in August 2006 I found crayfish within 3 km of the Ord River dam wall (*i.e.* Lake Argyle), indicating they are now distributed throughout Lake Kununurra. Nevertheless, I did not capture any redclaw crayfish in any other river system or water body (including Lake Argyle) in the wider Ord River catchment outside Lake Kununurra, or elsewhere in the east Kimberley region.

During my years of trapping I have received anecdotal evidence for redclaw crayfish existing in the (lower) Ord River below Lake Kununurra, with anglers reporting remnant claws in the guts of barramundi (*Lates calcarifer* (Bloch)). Those claws that I have inspected, however, have been of cherabin (or freshwater prawn, *Macrobrachium* sp. L.) and the similarities in claw morphology between the two might mislead the untrained eye. Notwithstanding, cherabin are found throughout the downstream reaches of the lower Ord River and if redclaw crayfish are escaping there, it may be that predation of them by Ariid catfishes is limiting their dispersal (see Doupe *et al.* 2004; Morgan *et al.* 2004).

The nearest population of redclaw crayfish that I am

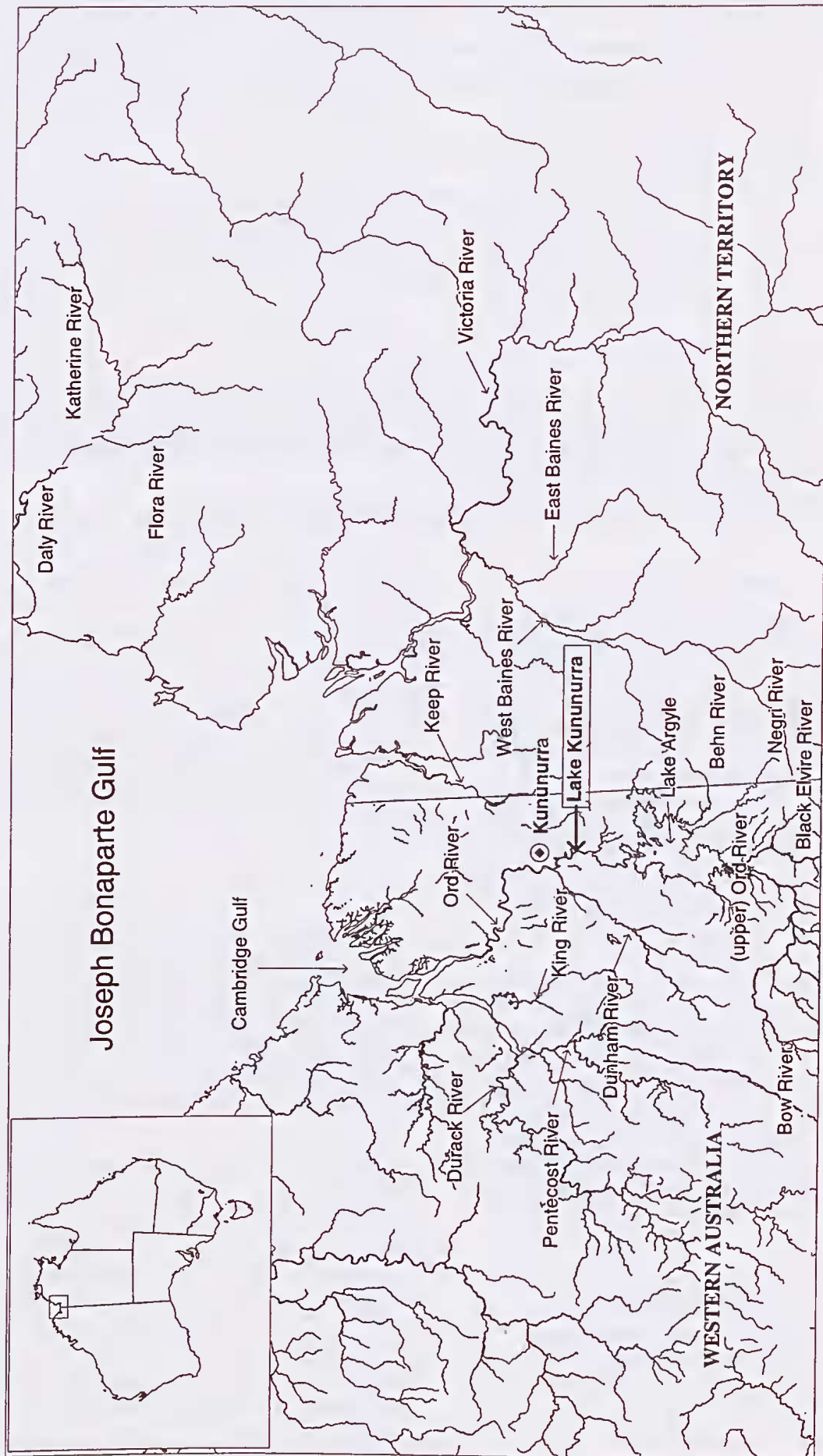


Figure 1. Geographic overview of river systems sampled for redclaw crayfish in the east Kimberley region of Western Australia and the Northern Territory. Note that redclaw crayfish were only found in Lake Kununurra and a detailed map of this lake can be found in Gill *et al.* (2006).

Table 1

Summary reference point locality details for the distribution of redclaw crayfish in watersheds of the east Kimberley region. (Further sample site information is available from the author).

River system	General Location	Latitude (S)	Longitude (E)
Ord River above Lake Argyle			
Behn River	Argyle Downs station billabong	16°45'	128°94'
Behn River	Duncan Road crossing	16°46'	128°05'
Negri River	Duncan Road crossing (downstream)	16°61'	128°04'
Ord River	No. 8 yards Spring Creek station	17°06'	128°06'
Ord River	Old station billabong	17°31'	128°83'
Black Elvire River	Palm Springs water hole	17°59'	128°64'
Ord River	Crossing to Bedford Downs station	17°40'	128°52'
Bow River	Lissadell station	16°68'	128°60'
Dunham River	Gorge on Doon Doon station	16°27'	128°16'
Dunham River	New bridge crossing	16°01'	128°48'
Dunham River	Excelsior Reach	15°82'	128°55'
Dunham River	Flying Fox Hole	15°80'	128°65'
Lake Argyle	Lake above Spillway Creek	16°06'	128°77'
Lake Argyle	Boat ramp area	16°10'	128°74'
Lake Kununurra	All tributaries and main channel	15°57'	128°46'
Ord River below Lake Kununurra			
Dunham River	Ord River junction	15°77'	128°68'
Ord River	Ford's Beach	15°75'	128°70'
Ord River	Ivanhoe Crossing	15°71'	128°67'
Ord River	Button's Crossing	15°68'	128°68'
Ord River	Skull Rock	15°67'	128°70'
Ord River	Carlton Crossing (upstream)	15°56'	128°58'
Other Cambridge Gulf Rivers			
King River	No.1 billabong	15°55'	128°11'
King River	Moochalabra Dam	15°56'	128°10'
Pentecost River	Upstream of crossing	15°73'	127°86'
Durack River	Jack's Hole billabongs	15°54'	127°66'
Joseph Bonaparte Gulf Rivers			
Keep River	Upstream of Legune station crossing	15°45'	129°03'
Keep River	Downstream of Legune station crossing	15°45'	129°03'
West Baines River	Fish Hole, Amanbidgi (Kildurk station)	15°75'	129°85'
East Baines River	Victoria Highway crossing	15°52'	130°08'
East Baines River	Auvergne station billabongs	15°59'	130°05'
Victoria River	Timber Creek (caravan park area)	15°40'	129°20'
Victoria River	Coolibah station billabong	15°41'	130°22'
Victoria River	Jasper Gorge	15°45'	130°25'
Victoria River	Dashwood Crossing	15°76'	131°05'
Victoria River	Pigeon Hole out station	15°84'	131°06'
Victoria River	Camfield River/station crossing	15°97'	131°09'
Victoria River	Wave Hill crossing (Kalkarindji)	16°45'	131°05'
Victoria River	Roadhouse/Victoria Highway crossing	15°41'	130°10'

aware can be found approximately 300 km to the north-east of Kununurra in the Flora River, a tributary of the Daly River (Fig 1). My failure to trap any redclaw crayfish in any of the river systems extending north and eastwards of Lake Kununurra, including the Victoria River, suggests that there is a substantial buffer between this introduced population and the nearest conspecifics.

The results of this survey also suggest that redclaw crayfish continue to exploit niche space within Lake Kununurra, although I suspect that this is not without impact. For example, since 2002 I have observed a steady decline in the once ubiquitous cherabin in the lake and now I very rarely trap them, suggesting that a significant reorganisation of the ecological community may be

occurring there (see for example, Lodge *et al.* 1994; Shea & Chesson 2002). This evidence, although not quantified, may warrant further study of the ecological impacts of redclaw crayfish in Lake Kununurra.

The apparent isolation and confinement of redclaw crayfish to Lake Kununurra indicates that the management opportunity remains to contain them to this water body and perhaps attempt to rid this species from the Kimberley.

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